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EPAct Test Programs in ASD

15th Bi-Weekly Report

September 15, 2008

1. Light Duty Gas Exhaust Fuels

Contractor: SwRI, EP-C-07-028, WA 0-1
WAM: Connie Hart
Alt. WAM: Rafal Sobotowski
Other team members: Carl Scarbro, Mike Christianson, Tony Fernandez, Carl Fulper, Aron Butler
Budget: $4.3M, plus $3M in collaboration with NREL

Objective: Phases 1 and 2 are in support RFS 2 NPRM and Phase 3 is to establish the effects of RVP, T50, T90, aromatic and EtOH content on exhaust emissions from Tier 2 vehicles

Time Line

- Testing began by second week of April
- Phase 1 and half of Phase 2 finished by the end of June: Fuels 17 and 18 of Phase 1 were complete by end of June. Fuel 19 by end of July due to fuel delivery delays. Phase 2 to start by mid-September.
- Phase 3 will be finished May 2009: Phase 3 to be complete by January 2010 between testing/fuel delays to date and additional CRC fuels added into our random matrix.

Program Status:

- Fuel status for Phase 3:
  - Refinery tool does not predict distillation curve with accuracy. Rafal has not had success with ASPEN to update the blending tool. We are utilizing in-house ASD programming support to move us forward.
- Data/Analysis:
  - Briefing for Margo is planned for sometime in September, to review data from fuels 17, 18 and 19.
  - Cay Yanca is working on Toxics data analysis with regular meetings to identify issues and explain/reconcile this with the profiles being developed from the toxic data for the air quality modeling for RFS2.
- Phase 2 cold room construction and Horiba equipment upgrades are finished. In process of testing the new configuration. Should be starting Phase 2 testing next week.
- Discussions are continuing on extra testing between Phase 2 and Phase 3 before enough fuels have been delivered to initiate the testing.

2. Oil Study

Contractor: NVFEL
Project lead: Mike Christianson, Rafal Sobotowski
Budget:

Objectives: Results to impact Phase 3 of EPAct study at SwRI (July)
Objective 1: Define duration of engine oil conditioning needed to stabilize the effect of oil volatility on PM emissions
Objective 2: Define the impact of lubricant interaction with fuel ethanol on PM emissions

Time Line

- Estimated duration of pilot: 15 weeks (May 11)

Program Status:

- Additional data analysis to be conducted by George Hoffman as second priority (after SwRI data)
- Chet briefing on final analysis results as next step

3. PM Speciation

Contractor: NVFEL
Project lead: Mike Christianson, Marion Hoyer
Other team members: Carl Scarbro, Rafal Sobotowski, Joe McDonald
Budget: $345K ($55K on inventory and data issues from other EPAct programs)

Objective: To determine fuel effects on PM mass, size and composition, and obtain speciated semi-volatile VOC, metals and ions, and gaseous VOC (MSATs), alcohols and carbonyls.

Time Line: Late 2008

Program Status:

- ORD site visit planned for week of September 22. Joe Mcdonald, John Menter, and Tom Schrodt will assess their site for 1065 compliancy.
- Anticipate starting the laboratory round robin as a warm-up or pilot to the actual test program, This should start before the end of the year.

4. Nonroad Exhaust Program

Contractor: Carnot Intertek
WAM: Carl Scarbro
Alt. WAM: Cheryl Caffrey
Budget: $830K

Project Overview:

Objective: Testing 6 paired engines including 2 Class 1, 2 Class 2, 2 Class 4, (one Class 2 engine has catalyst) on three fuels; national average non-oxy gasoline (Fuel A), an octane matched E10 (Fuel B), and a certification fuel (E0).

Timeline

- The original program was to be completed last year
- Should begin by April 1st and finish in October of this year: delays in schedule due to fuel delivery status.

Program Status

- More of the small SI engines completed their durability aging and are ready to be emission tested this week. Two Class II and three Class IV (two with catalyst) are left to begin the study
- Current results are being statistically evaluated.
    - Current results show HC+NOx emission increases for commercial engines on E10 compared to cert fuel.
    - Decreases in HC+NOx are seen for residential engines and a catalyst equipped engine (a Class II Kawasaki engine).
- DOE's small SI engine study report is expected this week or next. We will be able to compare our results to the results of their studies

4.a. Nonroad Exhaust tie-in with CARB

Contractor: SwRI
WAM: Cheryl Caffrey
Alt. WAM:
Other team members: Carl Scarbro, Tony Fernandez
Budget: $500K

Program Status

- Waiting for Work Plan submittal.

5. Evap Testing

Contractor: SwRI, EP-C-07-028, WA 0-4
WAM: Connie Hart
Alt. WAM: Dave Brzezinski
Other team members: Carl Scarbro, Tony Fernandez
Budget: $600K

Objective: Additional, newer technology, high sales volume vehicles to the CRC E-77-2 permeation test program.

Time Line: Testing from June 2008 thru June 2009: Testing will not start until end of summer.

Program Status:

- Work assignment was approved this week.
- Testing shall begin with delivery of QAPP in next few weeks.

6. Determine Percent of High Evaporative Vehicles in Fleet

Contractor: ERG, EP-C-06-080, WA 1-2
WAM: Connie Hart
Alt. WAM: Dave Brzezinski
Other team members: Carl Scarbro, Carl Fulper, Tony Fernandez, Jim Warila
Budget: $1M

Objective: Find the percentage of high emitting evaporative emission vehicles in the average fleet of on-road motor vehicle passenger cars and light trucks.

Time Line

- ICR clock started with Federal Register notice 2/14/08
- SOW package went to Cincinnati 2/22/08
- Approval of Work Plan by March 24: Work Plan was approved June 19 (after CRADA signed).
- Contractor to supply supporting documents for ICR submission March 31: delivered May 8th.
- Another 30 day comment period for ICR, roughly month of May.
- Goal is to have ICR in place by mid-June for recruitment and pilot field work to begin. Partial ICR approval has been given for the Pilot phase.
- Finalize test procedure for larger program by August 22 so recruitment can begin for field work in Sept and October. Larger program to be defined by end of September for small version of larger program to occur in October.
- Compile data and draft report by early December of 2008

Program Status:

- Pilot in Denver is complete:
  - ERG tested 87 vehicles in portable SHED (PSHED)
  - The portable SHED (PSHED) looks especially encouraging with very high propane retention and correlation to lab SHEDs.
  - 23 vehicles recruited and tested in Laboratory for comparison to the PSHED.
- Plan for the larger program shall be complete by end of September and submitted to OMB for approval.
  - Smaller version of large program to take place in San Antonio, Texas in October. Balance in Spring of 2009.
  - Use RSD for pre-screening as informed from pilot.